

NON-PUBLIC?: N
ACCESSION #: 9112270288
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Granf Gulf Nuclear Station PAGE: 1 OF 04

DOCKET NUMBER: 05000416

TITLE: Lightning Induced Scram
EVENT DATE: 11/19/91 LER #: 91-012-00 REPORT DATE: 12/18/91

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Riley Ruffin / Licensing Specialist TELEPHONE: (601) 437-2167

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: Yes EXPECTED SUBMISSION DATE:
12/31/92

ABSTRACT:

On November 19, 1991, a thunderstorm with severe lightning occurred in the site vicinity. At approximately 2049, during the storm, the Division 2 Average Power Range Monitors (APRM) IG1 received a high neutron flux signal resulting in a trip on the Division 2 Reactor Protection System (RPS). Prior to the trip occurring on the Division 2 RPS, a Maintenance surveillance was in progress which caused the Division 1 RPS to be in the tripped condition. Both systems being in the tripped condition, resulted in an automatic reactor scram. Following the scram, vessel water level decreased to -14 inches. Water level was restored by the Condensate and Feedwater Systems.

Based on a review of computer data, it appears that the output of a five volt power supply associated with the APRMs may have been deenergized, then reenergized. This would have resulted in an APRM scram. A supplemental report will be submitted following the determination of the

root cause of the lightning induced scrams experienced at GGNS.

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END OF ABSTRACT

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A. Reportable Occurrence

On November 19, 1991, an automatic Reactor Protection System (RPS) JC! actuation occurred due to a lightning induced neutron monitoring spike. This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv).

B. Initial Condition

The plant was in Operational Condition 1 at approximately 100 percent power. Plant Maintenance was performing a functional test to ensure the operability of the Division 1 reactor vessel water level instrument loops. This test is required every 31 days in accordance with the plant Technical Specifications. The 'A' RPS trip system was in a tripped condition due to the functional test prior to the lightning induced spike on the neutron monitoring system.

C. Description of Occurrence

On November 19, 1991, a thunderstorm with severe lightning occurred in the site vicinity. At approximately 2049, during the storm, the Division 2 Average Power Range Monitors (APRM) IG! received a high neutron flux signal resulting in a trip on the Division 2 Reactor Protection System (RPS). Prior to the trip occurring on the Division 2 RPS, a Maintenance surveillance was in progress which caused the Division 1 RPS to be in the tripped condition. Both systems being in the tripped condition, resulted in an automatic reactor scram.

Following the scram, water level decreased to -14 inches as indicated by control room indications (1C34R614 and R615). Reactor water level was restored by the Condensate SD! and Feedwater SJ! Systems. The plant was stabilized in accordance with plant procedures.

As a result of the lightning strike, a number of trip units in various systems indicated gross failures. However, there were no

failures of the systems or components associated with the trip units which indicated failures. Additionally, fuses associated with three ventilation process radiation monitors blew during the event. The APRM channels along with the trip units, which indicated gross failures, were tested and their operability verified. The fuses from the process radiation monitors were replaced and functioned properly. An inspection of the Turbine, Auxiliary and Enclosure Building roof was performed. There was no evidence of lightning striking these structures.

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D. Apparent Cause/Actions

Following the scram, a task force was formed to investigate the history of lightning strikes at GGNS and determine the reason(s) GGNS is susceptible to the effects of lightning strikes.

A review of the APRM System design revealed that a power supply monitoring card senses the output voltage of the 5 volt power supply. In the event the monitoring card senses a plus or minus .2 volt change, the output of the power supply is terminated. The termination of the output of the power supply results in an APRM scram. Based on a review of computer data, it appears that the output of the power supply may have been deenergized, then reenergized during the event.

A functional check of APRM indications was performed on November 20, 1991 to confirm proper response. No adverse effects were observed.

Even though several possible causes have been identified, all causal factors have not been confirmed at this time.

In the interim, a standing order was issued instructing Operations to decrease power and terminate all surveillances which would cause a RPS trip system to be in the tripped condition in the event a severe storm front is approaching the plant. This action will decrease the probability of a scram resulting from APRM spikes due to lightning strikes.

Subsequent to commercial operations, GGNS has experienced five scrams due to lightning strikes. Installation of the lightning dissipation array for vulnerable areas was a result of previous events. Following the lightning related scram reported in LER

91-010, GGNS removed the static line from the 115 kV tower which terminated on the Turbine Building. Also, additional lightning dissipation arrays were installed in an effort to prevent further scrams due to lightning. A further corrective action to be performed as a result of the scram was the removal of the static lines from the 500 kV tower to the turbine building. This activity required the 500 kV lines to be deenergized. Therefore, it was scheduled to be performed during the next refueling outage. The lines were removed during work activities following the November 19, 1991 scram.

In a continuing effort to preclude further scrams due to the effects of lightning, further studies are being performed to determine the extent of GGNS's susceptibility to lightning induced transients. A supplemental report will be submitted following the determination of the root cause of the lightning induced scrams experienced at GGNS.

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E. Safety Assessment

Based on a review, it was determined that all safety systems behaved as expected. The vessel water level reached a minimum of -14 inches (as indicated on 1C34R614 and 1C34R615) which is approximately 152 inches above the top of active fuel. No safety functions or components were compromised as a result of this event.

F. Additional Information

Energy Industry Identification System (EIIS) codes are identified in the text within brackets !.

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W. T. Cottle
Vice President

Operations
Grand Gulf Nuclear Station

December 18, 1991

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attention: Document Control Desk

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Lightning Induced Scram
LER 91-012

GNRO-91/00195

Gentlemen:

Attached is Licensee Event Report (LER) 91-012 which is an interim report.

Yours truly,

WTC/RR/cg
attachment

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*** END OF DOCUMENT ***
